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LOLIOLOPSIS CHIROCTES, A NEW GENUS AND
SPECIES OF SQUID FROM THE GULF
OF CALIFORNIA.

BY

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Redlands, California

SAN DIEGO, CALIFORNIA

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It has been observed more than once by writers dealing with the group that the cephalopod Family *Loliginidae* forms a remarkably homogeneous assemblage, its members agreeing very closely as to many points of form, organization, and development (cf. Naef, :12, p. 741), which serve contrariwise to set them rather sharply apart from nearly all other living families of squids thus far known to us. Naef, the most recent reviewer of the group, gave taxonomic recognition to this fact (:21, p. 535) when he made them the principal component of his higher division "*Metateuthoidea myopsida*". Only two other families are included with them and these are so insufficiently known that more complete information may easily enough show them to have been improperly affiliated.

The *Loliginidae* themselves are divided (Naef, :12, p. 742-745; :21, p. 535) into but six genera :

Loligo Lamarck 1799 (sometimes quoted as of Schneider 1784)

Sepioteuthis de Blainville 1824

Loliolus Steenstrup 1856

Lolliguncula Steenstrup 1881

Doryteuthis Naef 1912

Alloteuthis "Naef Ms." Wülker 1920 (= *Acruroteuthis* Berry 1920)

It is a matter of great interest therefore to be able to report the discovery of a seventh genus offering features altogether distinct from those of any of its recorded fellows, and sufficient in one or two respects appreciably to modify our conception of the characters proper to the family.

The material in hand comprises a beautiful series of specimens collected at Puerto Escondido, on the Gulf side of the peninsula of Lower California, Mexico, by Mr. Tom Craig of Pomona College. I

am much indebted to Mr. Craig not only for permitting my examination and study of his material but for unreservedly placing the whole of it at my disposal. Acknowledgement should also be made to my artist, Mr. Rodman K. Cross, of Redlands, California, for his painstaking efforts to secure proper delineation of the complex structural details found in this strange animal. In this his exquisite brushwork speaks for itself.

LOLIOLOPSIS new genus

DIAGNOSIS: Small loliginiform squids of the Family *Loliginidae* having the rather short fins joined in smoothly rounded union past the tip of the body, the funnel furnished with externally evident dorsal adductor muscles, the buccal lappets bearing each a few minute suckers, the gladius delicate and narrow with a long rostrum, and the sexes strongly dimorphic. Males smaller and a little more robust than females, and with relatively longer arms, both arms of the ventral pair being secondarily modified, the right by the development of a large semicircular flap on its inner margin, the left by the suppression of all its suckers save a few near the base, and by its extreme elongation and attenuation distally, an elaborate comb-like organ being developed at the tip of the arm perhaps in homology with the similarly situated modified sucker pedicels to be observed in other genera.

REMARKS: Although obviously suggesting some of the smaller species of *Loligo*, *Loliolopsis* is well set apart from this as from all other genera of the family by the fact that both ventral arms in the male are sexually modified. It also differs from *Loligo* in the elliptical fins, unpointed behind, but these are smaller relative to the body than in the more clumsily built *Lolliguncula*. The nearly straightsided gladius is also not quite typical for *Loligo*. The comparatively small size, great reduction of the sucker-bearing area of the left ventral arm in the male and the reduction of the funnel retractor muscles suggest an approach to the eccentric *Loliolus*, although in other particulars no such approach appears. When an investigation of the visceral anatomy becomes possible the systematic position of the genus within the family can doubtless be more exactly allocated.

The generic name proposed is derived from that of this presumably related genus, *Loliolus*, + the Greek ὄψις (aspect of), the hybrid compound appearing defensible under the circumstances.

Loliolopsis chiroctes new species

DIAGNOSIS: Small loliginiform squids having the sexes quite conspicuously dimorphic, the body of the ♀ larger than that of the ♂ and with relatively shorter arms and larger fins; arm formula of ♀ 3, 4, 2, 1, of ♂ 4^l, 4^r, 3, 2, 1, the dorsal pair conspicuously the smallest and shortest, the strongly keeled third pair the stoutest, though in the ♂ exceeded in length by the ventral pair; both ventral arms in ♂ sexually modified; right ventral arm of ♂ narrowed and bearing numerous very small suckers throughout its length, its keels wide and the ventral one further broadened near the middle to form a conspicuous semicircular flap; left ventral arm of ♂ slender and excessively attenuated and produced, bearing only a few pairs of minute suckers at the base, the mesially grooved inner face thence bare until a comb-like series of finger-shaped papillae arises on the inner-oral angle of the arm at its extremity; tentacles short, the clubs moderately expanded and bearing four rows of suckers of which those of the two inmost series are notably the largest on the main part of the club; gladius narrow and delicate, widest near the middle, and with the midrib free for the anterior third of its length.

DESCRIPTION OF MALE

Plate 32, fig. 1; Plate 33, figs. 1, 2, 4, 5

The ♂ is a small loliginiform squid having a nearly cylindrical *Body* (Pl. 32, fig 1) but little wider than deep, which is nearly straight-sided or weakly convex anteriorly, but tapers rapidly between the fins to a rather blunt point behind. The *Mantle* is firm and muscular, its anterior margin produced dorsally into a small conical rostrum and ventrally into weak angular projections on either side of the rather deep emargination subjacent to the funnel. The *Fins* are of moderate size, their length about one-third and their total transverse diameter about one-half the dorsal mantle length; in outline they are roughly elliptical or elliptic-sagittate, being almost semicircular in outline posteriorly where they are smoothly continuous with one another just above the tip of the body, which they also exceed a trifle posteriorly. Widest behind the middle and rounded or very obtusely angled at the sides, their anterior margins slope forward in a slightly convex line until just before their junction with the body when they are suddenly notched in on each side to form a small free anterior lobe.

The *Locking Cartilages* are simple, narrow, and nearly straight, the funicular components being slightly widest posteriorly, narrowing and becoming somewhat more strongly cartilaginous in front. The *Funnel* is short, stout and muscular, with only about the distal one-third to one-half protruding from under the mantle margin. An abrupt transverse constriction on the ventral aspect a little way back from the aperture accentuates the swollen or pot-bellied appearance possessed by the exposed portion of the organ behind this point. Internally the funnel is provided with a conspicuous tongue-like subterminal valve arising on the dorsal wall just in front of the aforementioned constriction, and a well developed *Funnel Organ* comprising a large \wedge -shaped medio-dorsal pad and a pair of smaller ovate ventro-lateral pads. The adductor muscles are very narrow and delicate, but visible externally as a double pair of slender bridles supporting the funnel at the base of the large and strongly excavated funnel-groove (Pl. 33, fig. 6 [♀]).

The *Head* is rather small, as wide as, or even a trifle wider than, the widest part of the body, but it is less than half as long as wide. The dorsal surface is flattened or barely convex, the ventral slightly concave. The *Eyes* are fairly large and conspicuous but not notably protruding.

The *Arms* vary widely in appearance and structure. Those of the dorsal pair are much the smallest and most delicate in structure, are conspicuously keeled longitudinally on the aboral exposure, and attain only one-half to two-thirds the length of the second pair, the latter being much stouter and strongly flattened and squared aborally, but keel-less and attaining a little less than half the mantle length. The arms of the third pair are still stouter and longer, reaching rather more than one-half the mantle-length; they are much compressed dorso-ventrally and are strongly keeled on the aboral angle throughout their length. In the narrowest sense the *Nuptial Arm* is the left ventral, but both ventral arms are sexually modified (Pl. 33, fig. 1). The *right* ventral arm has the sucker-bearing face greatly narrowed, its swimming membranes much reduced, especially the inner or ventral, and its suckers reduced to about two-thirds the diameter (largest ca. 0.57 mm.) of those at a corresponding level near the middle of the adjoining third arm, and with more constricted apertures. These suckers are accordingly very numerous, about 50 pairs being possible of enumeration with the aid of a simple lens. Both inner and outer keels on this arm are strongly developed fleshy membranes, the latter arising directly from the base of the keel

on the adjoining third arm to form at once a broad sheath around the base of the tentacle, thence narrowing rapidly to the tip of the ventral arm. The inner keel is little more than an accentuation of the ventro-aboral angle of the arm at the base of the deep, sheer cleft which divides the ventral arms, but it steadily widens until near the middle of the arm it flares suddenly to form a conspicuous semi-lunate flap 3.5 to 4 mm. wide (Pl. 33, fig. 1), whence it again continues narrowly to the tip of the arm. The *left* ventral arm suffers strong modification throughout its length. This arm is as muscular or more so at the base as its mate of the opposite side, but the sucker-bearing face is subjected to still further narrowing so that a transverse section of the arm in this region exclusive of the keel is something like a tall isosceles triangle. The suckers likewise suffer an even greater reduction in size than on the right ventral arm, being not only excessively minute (0.46 mm. diam.) but often almost entirely wanting, there being in the type specimen only two suckers remaining adherent near the extreme base of the arm, while six pairs is the maximum in any of the specimens. Distal to the suckers a few minute paired alternating papillations may be made out, which if they bore suckers would make a total of possible eight pairs of suckers on the basal 10 or 11 mm. of the arm. This portion of the arm has a slightly swollen appearance, but thereupon the member narrows, and the remainder, although still firm and muscular, is extraordinarily attenuate, being produced into an extremely long slender extremity, so that the entire length of the arm is two and one-half to three and one-half times the length of the dorsal pair, or as much as four-fifths of the mantle length. Where the narrowing of the arm begins, a narrow longitudinal groove or sulcus appears on the inner side just below the sucker-bearing face, at first parallel to the latter, but promptly swerving nearly to the center of the oral face of the arm, and though at first narrow and relatively deep with thick fleshy walls, it gradually widens and becomes more shallow distad, the walls simultaneously becoming narrower and more membranous. A faint thread of membrane on either side of this groove with occasional possible traces of a very weak serial nodulation may represent the nearly obsolete rudiments of a pair of trabeculated swimming membranes. After about 15 mm. this sulcus may seem to lose itself in the now somewhat flattened oral face of the arm or it may continue to and even partially include the basal papillae at the terminal part of the organ. Except for five or six minute papillations like the traces of sucker pedicels (which form a continuation of the series of larger rudi-

ments already described) running parallel to the groove for the little space before it mounts to the summit of the arm, this part of the member is naked. In some specimens a subsidiary weak lateral groove develops on each side of the arm below the walls of the central sulcus and runs parallel thereto past its termination nearly to the tip of the arm, but in other specimens these secondary manifestations are less evident. The extreme distal part of the arm (about 12 mm.) beyond the point where the median sulcus usually ceases to be traceable bears on its oral face a single series of stout papillae in profile like the teeth of a very narrow comb (Pl. 33, figs. 4-5). In outline the papillae are actually arcuate-conical, very much the shape of small rose thorns except that they are curved forward instead of back and are not quite so stout at the base. In the specimens where a count has been attempted they are about thirty-five in number, rather closely placed, and nearly of a size save that the first few are a little smaller and they of course diminish with the arm where it finally tapers away. The largest are somewhat over 0.5 mm. long. Excessively minute traces of a few incipient similar papillae are also traceable proximally down the arm for a few millimeters. The aboral face of the arm is flattened like its mate and the outer keel is similarly developed at the base of the arm, though narrowing suddenly

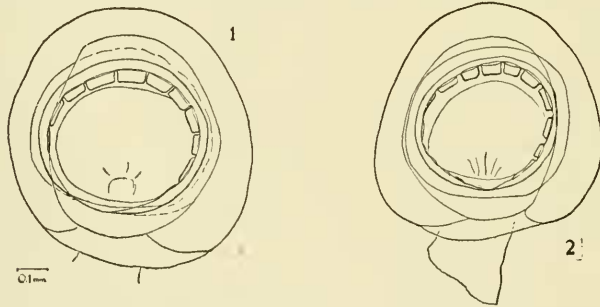


Fig. 1. Sucker of 8th pair on right third arm of ♂ paratype [852c] in oral aspect; camera sketch from mount in balsam. \times ca. 40.

Fig. 2. Sucker of 8th pair on right third arm of ♀ paratype [852e] in oral aspect; camera sketch from mount in balsam. \times ca. 40.

on the sulcate portion to continue as little more than a mere membranous carina until it becomes obsolete on the distal portion of the arm. The inner keel on the contrary is so reduced from the outset as to constitute little more than a rather acute lateral angle to the arm.

The *Suckers* on the sessile arms are small, biserial, short-pediceled, kettle-shaped, with rounded or rounded-pyriform apertures obtusely angled at the apex, and bear delicate horny rings with a narrow circumoral papillary area or corona better developed above and below the aperture than on the sides. They vary strongly in size on the different arms, being largest on the third arms where they attain their maximum diameter of about 0.75-0.85 mm. at approximately the seventh and eighth sucker-pairs, a horny ring taken from this position on the arm being armed along the superior two-thirds of the circumference with 10-11 short, sharply squared, battlement-shaped teeth, the lateral teeth being much reduced and the lower third of the rim practically smooth (text fig. 1). The suckers of the second arms are nearly as large, but they are much smaller on the dorsal pair. The still more minute suckers of the ventral arms (cf. preceding paragraph) have the teeth reduced to about 5 or 6 and so close together that careful scrutiny is sometimes necessary to make them out at all.

The *Tentacles* are short, but little exceeding the third arms in length. Their stalks are sub-triangular in action, being dorso-ventrally compressed with the oral face angled and reduced almost to a carina, the flat dorsal face forming the widest segment of the triangle, the ventral face also flattened and a little narrower, and the aboral face nearly as wide and also flattened, yet a trifle more rounded than the other two. The *Club* (Pl. 33, fig. 2) is but little expanded except for the wide trabeculated swimming membranes on either margin of the sucker-bearing face. This region of the tentacle is also triangular in section but with a reversal of angles so that the oral face is the flattened one, the aboral bearing toward its dorsal side a delicate semi-membranous keel which is inconspicuous proximally, but distally becomes as wide as the corresponding portion of the club itself. Proximally the marginal membranes pass into the fold-like walls of a narrow groove which runs down the stalk a short way from the face of the club. The tentacular *suckers* are basin-shaped, arranged in four series, with the first eight pairs of proximal suckers in the two median rows conspicuously larger than the corresponding suckers of the marginal series, especially the fourth to sixth pairs and especially again those of the dorso-median series, which are about twice the diameter of the neighboring marginals, the largest attaining a diameter of 1.1 mm. On the approximate distal two-fifths of the club the suckers of all the series become small and nearly equal, gradually diminishing until the extremity of the club is

reached. About twenty-seven quartets of suckers are to be counted on this portion of the club in the specimen examined. A horny ring of one of the large median suckers (text figs. 3-4 [♀]) has about 24 teeth, squared (evidently because broken off) on the upper margin, smaller

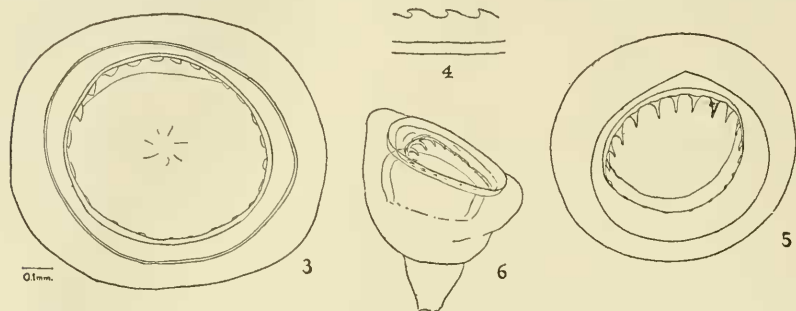


Fig. 3. Large median sucker from dorso-median series of right tentacle club of ♀ paratype [852e]; part camera sketch from mount in balsam; lower teeth approximate only. \times ca. 40.

Fig. 4. Detail of horny ring of large median sucker from right tentacle club of ♀ paratype [852e]; camera outline from mount in balsam. \times ca. 40.

Fig. 5. 6th large sucker from dorso-median series of left tentacle club of ♀ paratype [852e] with teeth unbroken; part camera sketch from sucker *in situ*. \times ca. 40.

Fig. 6. Marginal sucker from nearly midway of tentacle club of ♀ paratype [852e]; part camera sketch from mount in balsam. \times ca. 40.

and more acute on the sides, again squared (broken off?) or much reduced below. Smaller suckers of the median series (text fig. 5 [♀]) have the teeth acute all around, as do the smaller marginal suckers (text fig. 6 [♀]). The corona is well developed.

The *Buccal Membrane* is well developed, its seven lappets little projecting from their connecting web and bearing near the tips (text fig. 7) one to three minute suckers each, the largest sucker measured having a diameter of 0.18 mm.

The *Mandibles* are very thin and fragile, only the biting tips and the margins of the inner slopes being black.

The *Radula* (text fig. 8) has small, short, wide, strongly tridentate rhachidian teeth, the median cusps of which are very acute and about twice as long as the stouter and more arcuate side cusps. The first laterals are the smallest and shortest of the series, bearing two short, sharp, well-separated cusps, of which the inner is only a little larger

than the outer. The second laterals are wide and bear a single large, stout, acute, down-curving cusp on the inner side, the outer side being well produced but unfurnished with secondary cusps. The scimeter-shaped marginals are the largest teeth of the series, comprising a long arcuate, pointed blade springing from a heavy, deep-staining pyriform base.

The exceedingly thin and fragile *Gladius* (text fig. 9) is narrow, the free part of the mid-rib almost one-third the total length, and the maximum width only about 7 mm. in the specimens dissected. The wings are very thin and fragile, widest near the middle of the gladius, thence tapering steadily for the most part but at the end more rapidly to the posterior tip, with a narrow thickening proceeding in a straighter line just inside the margin on each side. In front the wings taper very rapidly at first almost to the mid-rib, then very gradually where they extend narrowly along the free portion until they become reduced to a mere angle or wholly obsolete about half way to the anterior extremity.

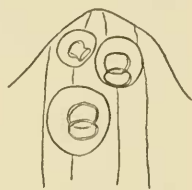


Fig. 7. Tip of lappet of buccal membrane of ♂ paratype [852e] bearing three suckers; camera outline from mount in balsam. \times ca. 40.

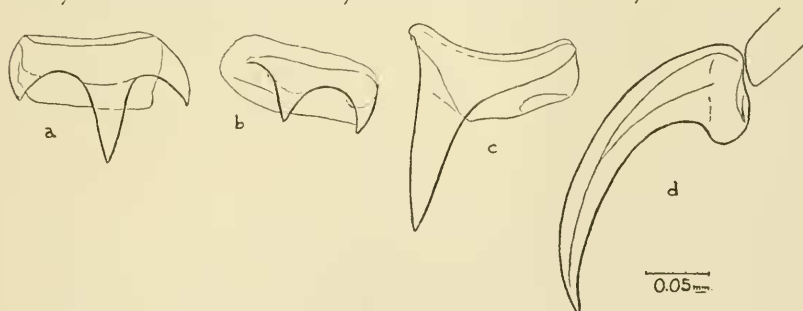


Fig. 8. Teeth from radula of ♂ paratype [852c]: a—median, b—ad-median or first lateral, c—major or second lateral, d—marginal; camera outline from mount in balsam. \times ca. 160. (The teeth selected for illustration are from the same general region of the radula but not from an identic transverse series.)

The *Color* of specimens preserved in alcohol, is a dull Pinkish Buff to Cinnamon-Buff (Ridgway's *Nomenclature of Color*), the many conspicuous dorsal chromatophores Haematite Red, the ventral ones becoming smaller and paler. On the head the chromatophores are so abundant and confluent, especially just over the eyes, as to make two large patches of Dark Neutral Gray. They are numerous on the outer surfaces of the arms and tentacles and there are a few small ones running down the

inner side of the dorsal face of the tentacles to a point about half way down the stalk. There is a single series of especially large chromatophores running down the center of the aboral face of the right ventral arm and the thickened portion of the left ventral arm, with a less conspicuous series of smaller chromatophores inside of and parallel to this on each arm at the line of junction of the ventro-marginal membrane, and also a faint and imperfect series to be made out on the aboral face of the dorsal membrane. Linear series of chromatophores are likewise to be differentiated on the outer aspect of the dorsal arms and both dorsal and ventral aspects of the third arms, marking the juncture with the keel, on the aboral face of the second arms, and (very minute) on the aboral side of the ventro-marginal swimming membranes of the second and third arms.¹

DESCRIPTION OF FEMALE

Plate 32, fig 2; Plate 33, figs. 3, 6

The ♀ (Pl. 32, fig. 2) is of conspicuously different proportions than the ♂, the mantle of the largest specimen exceeding in length that of the largest ♂ by about 20%, although the width and depth of the body remain about the same. The *Fins* are likewise larger than in the ♂, but their proportions taken in percentages of body length are not so conspicuously different, although they appear to average a little longer in relation to the mantle length without being wider to correspond, and are thus a trifle more rhomboid in gross outline.

The *Arms* have the nearly constant formula 3, 4, 2, 1, and are distinctly stouter than in the ♂ both relatively and absolutely, the second pair being less than one-third, the third pair less than two-thirds the mantle length. Mounted suckers from the third arm pair which may attain a diameter of 1.0 mm. (text fig. 2) show 11-12 squared, battlement-shaped teeth much like those of the ♂ except that they are narrower and less closely placed. A large ventral arm sucker measures 0.75 mm. in diameter.

¹*Color in Life*: "In life the squids were very translucent and appeared to have no coloration except for the ink-sac, and some had a little pigmentation dorsally, but only a few had this and it was even then quite inconspicuous. If I remember rightly the color of the 'ink' was a woody brown." (Tom Craig *in litt.*)

The *Tentacles* are about the same length as in the ♂, but the clubs (Pl. 33, fig. 3) are larger and appear to have rather wider marginal membranes. Here again there are about six pairs of large suckers in the median rows, the central four pairs (text figs. 4-5) being consistently the largest (diameter of largest sucker measured 1.7 mm.) and with their dorsal members a little larger than the ventral. Although this difference is on the whole less conspicuous than in the case of the ♂, the median suckers of both series are distinctly larger relative to the remaining suckers of the club (text fig. 6) than in the latter sex, a circumstance possibly attributable in some degree to the greater absolute size of the ♀ specimens rather than to *sex per se*.

The longitudinal series of chromatophores on the arms are paler in *Color* and therefore much less conspicuous than in the ♂, while the head chromatophores are more slaty in hue and show more tendency to coalesce into a single large dorsal patch of Deep Violet Gray.

The *Gladius*, which differs only in small particulars so far as noted from that of the ♂, is herewith figured (text fig. 9).



Fig. 9. Gladius of ♀ paratype [852e], represented with wings pressed flat. \times ca. 1.9.

MEASUREMENTS

Author's Register Number	852 d	853	852 e	851 Type	852 c	852 a	853	852 b
Sex.....	♀	♀	♀	♂	♂	♂	♂	♂
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Total Length	95	86	90	98	98	91	93	87
Length of body, dorsal.....	61	55	53.5	50	50	49	46	45
Length of body, ventral.....	55	50	49	45	46	44	42	40
Tip of body to base of dorsal arms.....	66	59	56	54	52	51	49	48
Width of fin at widest point	12	10	9	9	9.5	9	8	8.5
Length of fin.....	21	18	17	16	17	16.5	14	13.5
Width across fins.....	31	26	25	24.5	27	24	22	22
Width of body.....	13	13	12.5	13.5	14	13.5	13.2	12.2
Depth of body.....	13.3	12	13	13	14	12.5	12.5	12
Width of head across eyes..	14.2	13	12.5	13.3	14	13	13	12
Length of head (nuchal cartilage to base of dorsal arms)	9	7	6.5	6.5	6.2	6	6.6	6
Length of (exposed portion of) funnel.....	5.5	5	5	6.2	4.2	5	7	6.5
Length of right dorsal arm	13	12	12	12	16	15.5	10.5	12
Length of left dorsal arm..	14	12	12	12	16	15.5	12	13.5
Length of right second arm	19	17	18	23	24	24	18	18
Length of left second arm..	19	16	18	23	24	23.5	18	18
Length of right third arm..	23	21	23	28	28	26.5	23	22
Length of left third arm....	23	21	21	27	28	27	25	25
Length of right ventral arm	21	18	21	26	27	22	22.5	22
Length of left ventral arm	21	19	21	41	40	39	40	36
Length of terminal organ of left ventral arm of ♂	12	11	10	10
Length of right tentacle.....	30	23	33	32	32	31	30	29
Length of right tentacle club	15	13	14	13	12	10.5	11.5	11
Length of left tentacle.....	28	25	34	29	31	32	32	28
Length of left tentacle club	14.5	13	14	11	12	11	12	11

(Arm and tentacle measurements taken on oral aspect)

TYPE: A ♂ [S.S.B. 851] in the author's collection. *Paratypes* of both sexes in the collection of the author [852] and the San Diego Society of Natural History [853].

TYPE LOCALITY: Puerto Escondido, east coast of Lower California; 5 ♂, 3 ♀, captured at night near entrance to inner bay; Tom Craig coll.; 4 March 1928.

HABITS: The following field notes on the habits and behavior of this species in life have been supplied by the collector, Mr. Tom Craig.—

“The squids came around the light in great abundance associated in compact schools of several hundred, I should judge. Sometimes they would dart by with great rapidity, while another time they would linger about the light until a sweep of the net would send them off again, the school always acting as a unit,—when one would go, all would follow suit and go with him. Their movements were very rapid and when I first tried to catch them with my ‘bug-net’ I was surprised and disappointed that I brought up my net with nothing in it. Finally, by leaving the net in the water and waiting till squids came over it, the attempts were attended by better success.” (Adapted from *litt.* by T. C. of 28 Aug. 1928).

REMARKS: This trim and graceful little species is so entirely distinct from all other species of living cephalopods known to us that special comparison is required with none of them. The fact that *both* ventral arms of the ♂ undergo sexual modification and the very remarkable development and organization of the left-hand member are unique even in the family *Loliginidae*, while not the most casual observer could possibly confuse this form with either of the only other two members of the family so far to have been described from our coasts. Both of the latter are not only very much larger, but *Loligo opalescens* Berry, which ranges to the north, has much larger, more sagittate fins, while *Lolliguncula panamensis* Berry from mid-continental tropical waters is vastly more robust and heavy-set. Whether and in what degree the ranges of these overlap, or the ranges of any two of them, are points which remain to be determined.

There is probably a remote chance that Dall's *Loliolus steenstrupi* ('71, p. 97) from “near the mouth of the Colorado River” was based upon the present species, but his diagnosis, like too many of the innum-

erable figureless "descriptions" by that writer, is so meticulously devoid of mention of any points calculated to be of critical import taxonomically that not even the true generic position of his specimen can be guessed at with any sort of certainty. Indeed his brief account might cover almost any juvenile squid of the family *Loliginidae*. Under these circumstances the name seems best thrown into limbo as unidentifiable, —a good riddance, as from the best of my information the type specimen is no longer extant.

At first sight of the peculiar comb-like organ at the extremity of the left nuptial arm in *L. chiroctes* one thinks at once of the series of modified sucker-pedicels similarly situated on the nuptial arms of *Loligo*, *Lolliguncula*, and *Sepioteuthis*. The two structures may indeed be completely homologous, but it is remarkable that in *Loliolopsis* there is evident no transition whatever into normal suckers, and the papillae are strictly uniserial, while in the other genera mentioned the homology with the suckers is perfectly plain, and a transition always in evidence proximally. The extraordinary specialization of the nuptial arms suggests the possibility of an equally interesting *locus* for the attachment of the spermatophores, but the ♀ specimen opened proved not to be gravid and yielded no clew.

The radula is essentially loliginoid in its make-up but the teeth of the first and second lateral series are modified in quite different fashion than in any typical *Loligo* with which I am familiar. Not since *Idiosepius notoides* has so interesting a cephalopod fallen into my hands for study.

The specific name chosen is derived from the Greek χείρ (hand) + κτείς (comb) and has reference to the peculiar formation of the left nuptial arm of the ♂.

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PLATE 32

Loliolopsis chiroctes n. gen. & sp.

(All figures from drawings in ink wash by Rodman Kay Cross)

- Fig. 1. Dorsal view of type specimen, a ♂ [851]; x $1\frac{3}{4}$.
Fig. 2. Dorsal view of paratype, a ♀ [852d]; same scale as Fig. 1.

